



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,447	03/01/2004	Nobuaki Hashimoto	118890	9995
25944	7590	03/10/2006	EXAMINER	
OLIFF & BERRIDGE, PLC			AU, BACH	
P.O. BOX 19928			ART UNIT	PAPER NUMBER
ALEXANDRIA, VA 22320			2822	

DATE MAILED: 03/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/788,447	HASHIMOTO, NOBUAKI	
	Examiner Bac H. Au	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1)  Responsive to communication(s) filed on 05 January 2006.
- 2a)  This action is FINAL. 2b)  This action is non-final.
- 3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4)  Claim(s) 1-7 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5)  Claim(s) \_\_\_\_\_ is/are allowed.
- 6)  Claim(s) 1-7 is/are rejected.
- 7)  Claim(s) \_\_\_\_\_ is/are objected to.
- 8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9)  The specification is objected to by the Examiner.
- 10)  The drawing(s) filed on 01 March 2004 is/are: a)  accepted or b)  objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All b)  Some \* c)  None of:
    1.  Certified copies of the priority documents have been received.
    2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1)  Notice of References Cited (PTO-892)
- 2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5)  Notice of Informal Patent Application (PTO-152)
- 6)  Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Response to Amendment***

1. Applicant's amendment dated January 5, 2006 in which claim 1 was amended has been entered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoffman (U.S. Pat. 6737750).

Regarding claims 1-2 and 7, Hoffman [Fig.1] discloses a method of manufacturing an electronic device, the method comprising:

forming an external terminal [15] on an interconnect pattern formed on a substrate [10]; and subsequently mounting a chip component [12] on the substrate face up, the chip component having an electrode [12c] on a first surface [12a] of the chip component opposite a second surface [12b] facing the substrate; and forming an interconnect [18] for electrically connecting the electrode [12] and the interconnect pattern [11a] at a temperature lower than a melting point of the external terminal [As disclosed (Cols.3-4,

whereby the manufacture of the substrate [10] including the formation of external terminals 15 is completed prior to the forming of conductive wires 18. For this reason, it would be inherent that the process of forming the interconnect is done below the melting point of the external terminals in order to not cause damage to the external terminals 15.];

wherein the interconnect is formed of a dispersant including electrically conductive particles [Col.4 lines 24-27].

wherein the chip component is a semiconductor element [Col.3, lines 14-22].

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoffman (U.S. Pat. 6737750) in view of Kunitomo (U.S. Pat. 5550408).

Regarding claim 3, Hoffman fails to disclose forming an insulating section adjacent to the chip component, wherein the step of forming the interconnect includes ejecting a dispersant including the electrically conductive particles over the insulating section and the interconnect pattern.

However, Kunitomo [Fig.9] discloses

forming an insulating section [14] adjacent to the chip component, wherein the step of forming the interconnect [17] includes ejecting a dispersant including the electrically conductive particles over the insulating section and the interconnect pattern [Col.8, lines 56-64].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Kunitomo into the method of Hoffman to form an insulating section adjacent to the chip component, wherein the step of forming the interconnect includes ejecting a dispersant including the electrically conductive particles over the insulating section and the interconnect pattern.

The ordinary artisan would have been motivated to modify Hoffman in the manner set forth above for at least the purpose of alternatively electrically connect the die in a flip-chip connection to eliminate the need for bonding wires [Hoffman; col.4 lines 27-29]. Additionally, the method of Kunitomo protects the integrated circuit and realizes the denser mounting of the semiconductor chip on the substrate [Kunitomo; col.1 lines 8-13]. Furthermore, the interconnect 17 provides connection for back bias [Kunitomo; col.8 lines 36-40].

Regarding claims 4-6, Kunitomo discloses wherein the insulating section is formed of a resin [Col.6, lines 3-6];

wherein the insulating section is formed to have an inclined surface descending in an outward direction from the chip component [14 of Fig.9].

***Response to Arguments***

4. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bac H. Au whose telephone number is 571-272-8795. The examiner can normally be reached on Mon-Fri 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BHA

  
Zandra V. Smith  
Supervisory Patent Examiner  
2 March 2000